**MAKERERE UNIVERSITY**

**MAKERERE UNIVERSITY BUSINESS SCHOOL**

**FACULTY OF COMPUTING AND INFORMATICS**

**FOUNDATIONS OF BUSINESS AND INFORMATION TECHNOLOGY COURSE OUTLINE**

**POSTGRADUATE DIPLOMA IN BUSINESS INTELLIGENCE &DATA ANALYTICS**

**MODULE : ONE**

**COURSE CODE: PGBIA 5101**

**CREDIT UNITS: 5**

**FACILITATORS**: Assoc. Prof. Robert Kyeyune

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| 1 | Introduction to Business Information Technology |  - **Theory: Scope, importance, and role of BIT in organizations**.Business Information Technology (BIT) integrates business processes with information systems to enhance decision-making, efficiency, and competitiveness. Its scope includes data management, process automation, and business intelligence. In organizations, BIT plays a critical role in streamlining operations, supporting strategic planning, enabling innovation, and improving communication, ultimately fostering productivity and sustainable growth in today’s digital economy - **Practical: Analyze IT infrastructure of a local business (field or case study).**Analyzing the IT infrastructure of a local business involves assessing hardware, software, networks, and data systems that support daily operations. This practical task includes evaluating system efficiency, cybersecurity measures, scalability, and integration with business processes. The analysis identifies strengths, weaknesses, and areas for improvement, guiding the business toward leveraging technology for operational optimization and competitive advantage. |
| 2 | Week 2: Information Systems in Business Operations |  **- Theory: Types of IS (TPS, MIS, DSS, ESS) and business processes**.Information systems support business processes at different levels. Transaction Processing Systems (TPS) handle routine operations, Management Information Systems (MIS) generate reports for decision-making, Decision Support Systems (DSS) assist in problem-solving, and Executive Support Systems (ESS) provide strategic insights. Integrating these systems with business processes enhances operational efficiency, informed decision-making, and overall organizational performance. - **Practical: Map business processes to IT systems using process modeling tools**.This task involves identifying an organization’s key processes and linking them to supporting IT systems using tools like BPMN diagrams or flowcharts. Mapping clarifies how information flows, reveals inefficiencies, and highlights automation opportunities. By aligning business processes with IT systems, organizations can improve efficiency, optimize resource use, and ensure technology effectively supports operational and strategic goals |
| 3 | IT Infrastructure and Cloud Computing | **Theory: Hardware, software, networks, virtualization, and cloud services.**Organizational IT infrastructure relies on hardware (servers, computers), software (applications, operating systems), and networks for connectivity. Virtualization allows multiple virtual systems to run on shared resources, improving efficiency. Cloud services provide scalable, on-demand access to computing, storage, and applications. Together, these components support business operations, reduce costs, enhance flexibility, and enable digital transformation in organizations. - **Practical: Set up a cloud-based storage and virtual machine on AWS or Azure (demo**).This practical involves creating cloud storage and deploying a virtual machine on platforms like AWS or Azure. Students configure storage buckets, launch virtual servers, and access them remotely. The exercise demonstrates cloud scalability, resource provisioning, and virtualization concepts, providing hands-on experience with modern IT infrastructure that supports cost-effective, flexible, and reliable business operations in real-world scenarios |
| 4 |  Databases and Business Intelligence |  - **Theory: DBMS, data warehouses, and BI applications.**Database Management Systems (DBMS) store, organize, and manage data efficiently, while data warehouses consolidate large volumes of historical data for analysis. Business Intelligence (BI) applications leverage these systems to generate insights, dashboards, and reports that support decision-making. Together, they enable organizations to transform raw data into actionable knowledge, improving strategic planning and operational performance. - **Practical: Create a relational database in MySQL/SQL Server and run simple queries.**This exercise involves designing tables, defining relationships, and populating a relational database using MySQL or SQL Server. Students practice running simple SQL queries such as SELECT, INSERT, UPDATE, and DELETE to manipulate data. The task reinforces database concepts, enhances query skills, and demonstrates how structured data supports analytics and decision-making in organizational information systems |
| 5 | Data Analytics and Visualization |  - **Theory: Data-driven decision-making and BI dashboards.**Data-driven decision-making leverages accurate, timely data to guide strategic and operational choices. BI dashboards visualize key metrics and trends through interactive charts and reports, enabling stakeholders to monitor performance and identify opportunities. By consolidating data from multiple sources, dashboards support informed decisions, enhance transparency, and improve organizational agility in competitive, fast-changing business environments. - **Practical: Use Power BI or Tableau to create a dashboard for sales or finance data.**This task involves importing sales or finance data into Power BI or Tableau to create an interactive dashboard. Students design charts, KPIs, and filters to track performance and trends. The practical demonstrates how BI tools transform raw data into actionable insights, enabling businesses to monitor financial health, identify patterns, and make timely, evidence-based decisions |
| 6 |  E-Business and Digital Platforms |  - **Theory: E-commerce models and digital ecosystems.**E-commerce models, including B2B, B2C, C2C, and C2B, define how businesses and customers interact online. Digital ecosystems integrate platforms, applications, and services to enable seamless transactions and value creation. They foster innovation, expand market reach, and enhance customer experiences by connecting businesses, consumers, and partners in a networked environment that supports efficient online operations and growth. - **Practical: Build a simple e-business prototype or online service workflow.**This practical involves creating a basic online store or service workflow, showcasing features like product listing, shopping cart, and checkout process. Tools like WordPress, Wix, or simple HTML/PHP scripts can be used. The exercise demonstrates how digital platforms facilitate online transactions, service delivery, and customer engagement, providing hands-on experience in building functional e-business solutions |
| 7 | Emerging Technologies in Business |  - **Theory: AI, IoT, Blockchain, and FinTech applications in business**.Emerging technologies are transforming business operations. Artificial Intelligence (AI) powers predictive analytics and automation, while the Internet of Things (IoT) enables real-time monitoring and smart operations. Blockchain ensures secure, transparent transactions, and FinTech solutions revolutionize payments, lending, and financial services. Together, these technologies drive innovation, enhance efficiency, and create competitive advantages in the digital economy **Practical: Practical: Demonstrate IoT or machine learning API integration in a business scenario**.This practical involves integrating an IoT device or machine learning API into a simple business workflow, such as tracking inventory levels or predicting sales trends. Students configure the API, capture data, and visualize outputs in real-time. The exercise demonstrates how intelligent technologies enhance decision-making, automate processes, and provide data-driven insights for modern business operations |
| 8 |  IT Security, Risk, and Ethical Practices |  - **Theory: Cybersecurity principles, IT risk management, and ethics.**Cybersecurity ensures the protection of information systems from unauthorized access, attacks, and data breaches. IT risk management identifies, assesses, and mitigates risks that could disrupt operations. Ethical practices guide responsible use of technology, data privacy, and compliance with regulations. Together, they safeguard organizational assets, maintain stakeholder trust, and support resilient and secure digital business environments. - **Practical: Simulate a network vulnerability scan using basic security tools.**This practical involves performing a simple network vulnerability scan using tools like Nmap or OpenVAS. Students identify open ports, potential threats, and security gaps in a controlled environment. The exercise provides hands-on experience in detecting vulnerabilities, reinforces cybersecurity principles, and demonstrates how proactive monitoring helps mitigate IT risks and strengthen organizational security posture |
| 9 | Digital Transformation and Strategic IT Alignment | **Theory: Using IT to gain competitive advantage and redesign business processes.**Information Technology (IT) empowers organizations to achieve competitive advantage by streamlining operations, improving customer experiences, and enabling innovation. Through process automation, data-driven insights, and system integration, IT supports business process reengineering to eliminate inefficiencies. Strategic adoption of IT allows organizations to respond quickly to market changes, optimize resources, and differentiate themselves in a competitive digital landscape **Practical: Develop a digital transformation roadmap for a selected organisation.**This practical involves creating a step-by-step plan for adopting digital technologies in an organization. Students analyze current processes, identify improvement opportunities, and propose IT solutions such as cloud migration, automation, or BI tools. The exercise results in a digital transformation roadmap that aligns technology initiatives with business goals to enhance efficiency, innovation, and competitiveness. |
| 10 | Student Practical Projects / Presentations |  - **Practical: Group projects integrating database, BI, and enterprise system applications.**This practical involves student groups designing integrated IT solutions that combine databases, business intelligence dashboards, and enterprise applications such as ERP or CRM. Teams develop functional prototypes that manage data efficiently, generate insights, and support business operations. The project fosters collaboration, problem-solving, and hands-on experience in building enterprise-level solutions aligned with real organizational needs. - Presentation of findings and demonstration of IT solutions.Students present their project outcomes, explaining the design, functionality, and business value of their IT solutions. The demonstration includes showcasing database interactions, BI dashboards, and enterprise system workflows. This activity enhances communication, teamwork, and professional presentation skills, while highlighting how integrated IT solutions improve decision-making, process efficiency, and overall organizational performance in practical business settings. |

**Teaching and Learning Methods**

- Interactive lectures and tutorials

- Hands-on labs and tool-based practical sessions

- Industry case studies and simulations

- Group projects and presentations

**Assessment Methods**

Practical Assignments (20%)

Group Project & Presentation (20%)

Final Examination (60%) – Theory and applied problem-solving

**Suggested Software for Practicals**

-Databases: MySQL, SQL Server, PostgreSQL

- BI & Visualization: Power BI, Tableau

- ERP/CRM: Odoo, SAP Learning Hub, Microsoft Dynamics

- Cloud & IoT: AWS, Azure, Google Cloud, Arduino/IoT Simulations

- Security Tools: Wireshark, Nmap (demonstration level)

**Recommended Reading Lists**

- Laudon, K. & Laudon, J. (2023). Management Information Systems: Managing the Digital Firm. Pearson.

- Turban, E. et al. (2022). Information Technology for Management: Driving Digital Transformation. Wiley.

- Sharda, R. et al. (2021). Business Intelligence and Analytics: Systems for Decision Support. Pearson.

- Selected online tutorials for Power BI, MySQL, Odoo ERP, and Cloud platforms.